



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/773,587	02/06/2004	Masahiro Takahashi	0553-0397	6735

7590 03/20/2006
COOK, ALEX, McFARRON, MANZO,
CUMMINGS & MEHLER, LTD.
200 WEST ADAMS STREET
SUITE 2850
CHICAGO, IL 60606

EXAMINER

ROY, SIKHA

ART UNIT	PAPER NUMBER
----------	--------------

2879

DATE MAILED: 03/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/773,587

Applicant(s)

TAKAHASHI, MASAHIRO

Examiner

Sikha Roy

Art Unit

2879

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-39 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2/6/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Regarding claim 6 which depends on claim 5, the specification does not provide antecedent basis for 'refractive index of the transparent film sequentially increases from the interface at the side of the second electrode'. Similar objections hold for specification regarding claimed subject matter in claims 25 and 36.

Appropriate corrections are required.

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Objections

Claims 6, 25,36 are objected to because of the following informalities:

The limitation reciting 'refractive index of the transparent film sequentially increases from an interface at the side of the second electrode' should be -- refractive index of the transparent film sequentially increases from an interface at the **opposite**

Art Unit: 2879

side of the second electrode --. Because the specification (page 17 lines 4-21) discloses the transparent film having almost similar refractive index as that of the second electrode at the interface of the side of the second electrode. By using the film including the first substance and having the almost similar refractive index as the second electrode 205, the transparent film 202 in the vicinity of the interface of the second electrode is to have the smaller composition ratio of the second substance to the first substance (that is a film almost made of the first substance), thereby reducing the difference in the refractive indexes at the interface of the second electrode 205 and the transparent film 202, and reducing the reflection of light at the interface.

d.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-3,9-13,20-22 and 28-32 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent Application Publication 2004/0166362 to Utsumi et al.

Regarding claim 1 Utsumi discloses (Fig. 2 paragraphs [0032], [0033],[0054], [0123], [0124]) a light emitting device comprising a glass substrate 1 having an insulating surface, a transparent film (inorganic film layer) 6 formed over the substrate, a first electrode (transparent electrode) 7 formed over the transparent film, a layer (with layers 8,9,10, 11) including organic compound formed over the first electrode 7, a second electrode 12 formed over the layer including organic compound wherein the refractive index of the transparent film 6 sequentially varies from an interface at a side of the substrate to an interface at a side of the first electrode.

Regarding claim 2 Utsumi discloses ([0033]) the refractive index of the transparent film sequentially increases from the interface at the side of the substrate to the interface at the side of the first transparent electrode.

Regarding claim 3 Utsumi discloses ([0054], [0059]) the transparent film comprises silicon oxynitride (SiO_xN_y).

Regarding claim 9 Utsumi discloses all the limitations which are same as of claim 1 and additionally discloses ([0062]) the transparent film (inorganic layer) 6 comprises a plurality of substances (SiO_x , SiO_xN_y , SiN_x) which include at least a first substance (O) and a second substance (N) and the composition ratio of the second substance to the first substance sequentially varies from the interface at a side of the substrate to an interface at the side of the first electrode.

Regarding claim 10 Utsumi discloses the composition ratio of the second substance (N) to the first substance (O) sequentially increases from the interface at the side of the substrate to the interface at the side of the first electrode.

Claims 11 and 12 essentially recite the same limitations as of claims 2 and 3 respectively and hence are rejected for the same reasons.

Regarding claim 13 Utsumi discloses the first substance comprises nitrogen and second substance comprises oxygen.

Claim 20-22 recite the limitations for the method of making a light emitting device which are essentially same as those of the light emitting device in claims 1-3 and hence are rejected for the same reasons.

Claims 28-32 recite the limitations for the method of making a light emitting device which are essentially same as those of the light emitting device in claims 9-13 respectively and hence are rejected for the same reasons.

Claims 5-8, 15-19, 24-27 and 34-39 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent Application Publication 2004/0124770 to Hayashi et al.

Regarding claim 5 Hayashi discloses (Fig. 3 paragraphs [0052],[0067]-[0072] and [0155]) a light emitting device comprising a substrate 20 having an insulating surface, a first electrode (pixel electrode) 23 formed over the substrate, a layer including organic compound 60 formed over the first electrode, a second electrode (cathode) 50 formed over the layer including organic compound and a transparent film (gas-barrier layer) 30 formed over the second cathode wherein the gas-barrier layer comprises silicon nitride (SiNx : refractive index 1.99) sub-layer and a silicon oxynitride (SiOxNy: refractive index 1.65) sub-layer formed in this order on the second electrode so that the refractive index

Art Unit: 2879

sequentially varies from the interface of the second electrode in a film thickness direction.

Regarding claim 6 Hayashi discloses the refractive index of the transparent film sequentially increases from the interface at the opposite side of the second electrode in the film thickness direction.

Regarding claim 7 Hayashi discloses the transparent film comprises silicon oxynitride film.

Regarding claim 8 Hayashi discloses (Fig. 12 paragraphs [0134] – [0137]) the light emitting device is incorporated in electronic apparatus selected from personal computer, cellular phone.

Regarding claim 15 Hayashi discloses all the limitations same as of claim 5 and additionally discloses the transparent film comprising a plurality of substances (silicon compounds) including first substance (nitrogen) and second substance (oxygen), wherein the composition ratio of the second substance to the first substance sequentially varies from the interface at a side of the second electrode in a film thickness direction.

Regarding claims 16 and 18 Hayashi discloses ([0071]) the composition of the second substance (oxygen) to the first substance (nitrogen) sequentially increases from the interface at the side of the second electrode in the film thickness direction.

Regarding claim 17 Hayashi discloses the transparent film comprises silicon oxynitride film.

Claim 19 essentially recites the same limitation of claim 8 and hence is rejected for the same reason.

Claims 24-27 recite the limitations for the method of making a light emitting device which are essentially same as those of the light emitting device in claims 5-8 respectively and hence are rejected for the same reasons.

Claims 34, 35, 37-39 recite the limitations for the method of making a light emitting device which are essentially same as those of the light emitting device in claims 15-19 respectively and hence are rejected for the same reasons.

Regarding 36 Hayashi discloses the transparent film (gas-barrier layer) 30 is formed so that the refractive index of SiNx (1.99) sequentially increases from an interface opposite to the side of the second electrode in the film thickness direction.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4, 14, 23 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication 2004/0166362 to Utsumi et al. and further in view of U.S. Patent Application Publication 2004/0124770 to Hayashi et al.

Regarding claim 4 Utsumi does not disclose explicitly the light emitting device incorporated in at least one selected from the group consisting of personal computer, mobile telephone.

Hayashi in the same field of endeavor discloses (Fig. 12 paragraphs [0134] – [0137]) electronic apparatuses such as personal computer, cellular phone including display using EL display. Hayashi further teaches ([0138]) that these apparatus with the display having EL display have prolonged lifetime.

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to incorporate the light emitting device with EL display of Utsumi in electronic apparatus selected from the group of personal computer, cellular phone as disclosed by Hayashi for providing display with prolonged lifetime.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent Application Publication 2001/0004121 to Sakama et al. discloses a layer of silicon oxynitride film between a substrate and a semiconductor film. U.S. patent Application Publication 2004/0008968 to Lee et al. discloses silicon oxynitride film depending upon nitrogen concentration have refractive index ranging from that of SiO_2 (1.45-1.50) to that of silicon nitride SiN (>2.0).

Art Unit: 2879

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sikha Roy whose telephone number is (571) 272-2463. The examiner can normally be reached on Monday-Friday 8:00 a.m. – 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar D. Patel can be reached on (571) 272-2457. The fax phone number for the organization is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Sikha Roy

Sikha Roy
Patent Examiner
Art Unit 2879